PROGRAMS THAT WRITE PROGRAMS

STATCOM CORPORATION

5766 BALCONES SUITE 202 AUSTIN TEXAS 78731 PHONE 512/451-0221

December 1, 1982

To: Apple III software developers

Re: CRTForm special offer

Statcom Corporation has recently released an Apple III Pascal version of CRTForm, a programmer productivity aid. For the duration of the Comdex show, we are offering the $400.00 software at a special price of $99.95 (plus shipping).

CRTForm is a tool which allows you to quickly and easily create turnkey application programs. The forms management system means that you can prototype applications before writing any code. Furthermore, you can field customize and modify your applications without recompiling your source code.

The system reduces the time and cost required to produce and field modify application programs. The run time system takes care of the tedious screen I/O and error trapping, and allows you to concentrate on applications development instead of user and screen interaction.

CRTForm has been a successful tool for software developers since the fall of 1981. Previously available only on the Apple II or under CP/M, the system has been through several revisions and is now being released as a stable and powerful system on the Apple III.

Although we are offering a show special, you will receive the same quality phone and letter technical support that we provide with all CRTForm systems. Furthermore, as enhancements are released we will make them available to you for a nominal fee.

CRTForm is being displayed on several different machines in booth 4140. Both technical and sales representitives will be available to answer your questions, give demonstrations, or to take your orders at the special show price of $99.95.

We look forward to seeing you at the booth. Thank you for your time.

Sincerely,

Neil Iscoe
President

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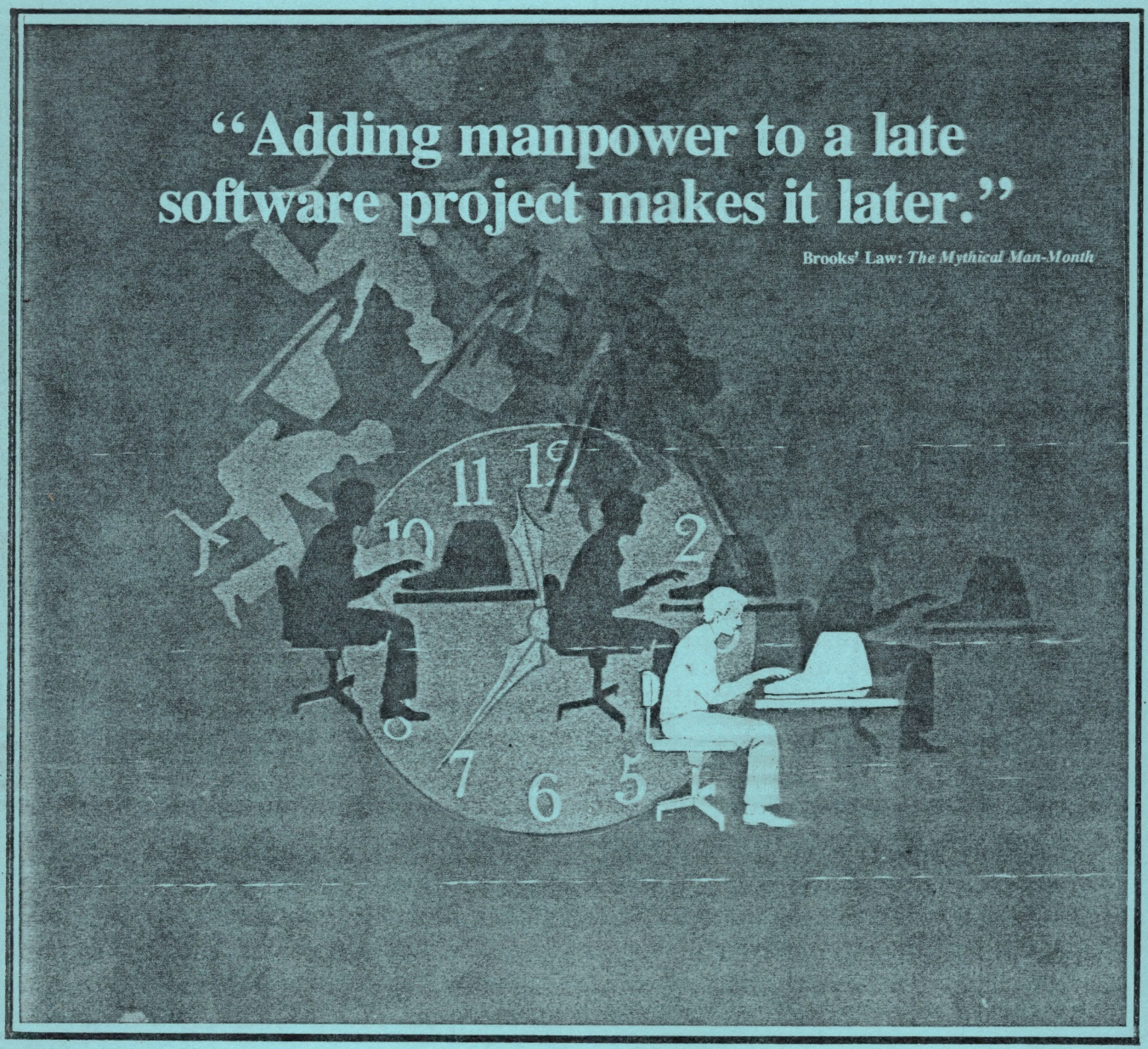

Don't waste man-months: Try CRTFORM.

Ask about our $99.95 show special.
Booth 4140

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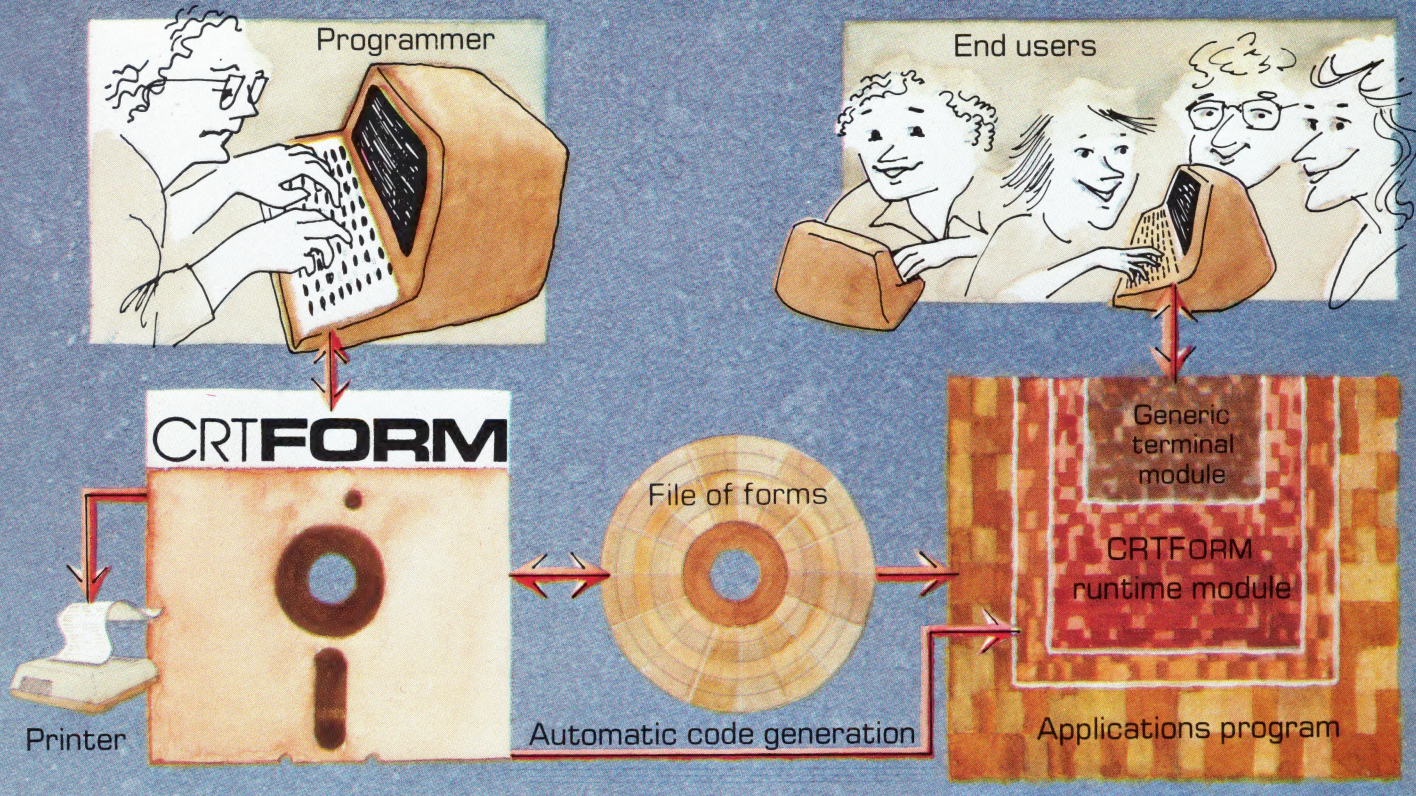
Tired of writing (and rewriting) customized and friendly error free code?



CRTForm™ is a programmer productivity tool that saves time.

CRTFORM produces a friendly bug free interface between end users and the applications programmer.

CRTFORM makes sure that end users enter information correctly, and gives error messages (in plain English) if they don't. It guarantees that programmers will receive correct information without having to write hundreds of lines of error checking code.

CRTFORM allows you to modify program input specifications without requiring expensive and time consuming changes in applications code. It even generates a source code skeleton (Pascal, BASIC, COBOL, FORTRAN, PL/I, and Ada) to interface the programmers' application code to the CRTFORM runtime module.

The CRTFORM package consists of:

- A forms manager that manipulates random access files of input specification forms.
- An editor that creates and modifies the specifications forms.
- A print utility that produces hard copy of forms and their specifications.
- A code generator that writes source code skeletons for ease of program interfacing.
- A terminal-independent runtime module in the machine language of your host processor.

CRTFORM is available under the CP/M, UCSD, and Apple Pascal operating systems. Please call or write for further information on OEM licensing arrangements, or for the name of your nearest CRTFORM dealer.

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PHONE 512/451-0221

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Software News™

Vol. 1 No. 8 THE COMPUTER SOFTWARE PRODUCTS NEWSPAPER December 7, 1981

In Fact, It May Worsen Them
Adding Programmers Won't Solve All Problems

By Neil Iscoe
Special to Software News

Productivity, or the lack of it, is a major concern in most programming houses. For programming, like pregnancy, takes time—schedule-wrecking, budget-killing, linear time. Although some programming shops try to perform the data processing equivalent of using nine women to make a baby in a month, its generally agreed that adding people to programming projects doesn't solve the problem.

The Solution?

One obvious solution is to find excellent programmers, pay them $60,000.00 per year, lock them in a room and hope for the best. Some companies do that, and sometimes that actually works. However, these prima donna programmers are often irresponsible and usually don't document the code they produce.

A second answer is to use strict management techniques. Pert charts and structured programming are two tools which can optimize the efficiency of programming teams. I endorse structured programming, good management techniques, and documentation standards. However, although these techniques make it easier to produce better code in a more reasonable period of time, problems still exist.

One solution is to let a program write a portion of the code. Programming aids can be viewed as tools, just like compilers are tools, which help good programmers produce better programs. Code generation tools help programmers by making it easier to produce programs which are concise, correct and consistent.

Programming Tools

What is a programming tool? (a programming aid?, a program generation system?) It is a piece of software which makes the programmer more productive.

Let's look at the scenario of a programming shop being faced with a custom inventory application. (Note: This example is true. If you replace inventory with hospital, bank, payables, GL, or stock system, it might apply to you.) After the initial client contacts have been made and the general specifications have been agreed upon, a systems analyst (or senior programmer) probably sits down with the client to find out exactly what the client wants.

This phase of project design, often known as "Getting Specifications", is the most important phase of program design. In this scenario, the client might indicate that he wants an item description of ". . . fifteen characters which does not need to include punctuation marks or numbers . . .". The specification gathering phase continues until all the initial program specifications have been made. The program is then coded, tested, and delivered to the client.

At this point you get a telephone call.

The client might tell you that the system will not work because he can only enter fifteen characters. He now says that the previously mentioned item description was ". . . 17 characters". Now you are faced with the problem of fixing the system or showing the client the contract fine print. Fixing the system (and not charging) will cost you money. Refusing to work on the project will cost you a reference and leave the client unsatisfied.

Screen Code Generation

Statcom is a software company continually faced with these problems. Although our programmers used specifications sheets, structured programming and Pascal, their overall productivity was hampered by inefficient interaction with the end user. Since it was considered important to deliver products to satisfied customers, we created a screen generation system for our own purposes. Although most readers are probably familiar with some systems of this type, a general design review is appropriate.

Our generator — CRT Form, was designed to accomplish several different goals:

1) The system needed to provide a fail-safe method for gathering, storing and modifying program specification;

2) It needed to provide a way to implement these specifications;

3) It needed to find a way to let the applications programmer access and modify the specifications;

4) It needed to provide the "bell and whistle" features which end-users hold as the final criteria of a working program;

5) It had to work on any brand of terminal;

6) It has to run a variety of different types of microcomputer hardware.

The system includes a forms manager, which manages forms within a file. These forms are designed so that they can be displayed on a CRT screen. The forms manager has the normal file manipulation functions (i.e., Add, Rename, Change, Delete, Copy, etc.). However, the main feature of the Form System is the Field Editor.

The Editor is similar to any page-oriented editor. However, the logical unit which the Editor operates on is a field instead of a character. Fields con-

Programming Tools Cut Costs, Tedium

(Continued)

sist of titles, video attributes and all the specifications which are necessary to define a program. Input fields can be optional or mandatory, of varying lengths and with varying types of restrictions. They can allow combinations of character, date, and numeric entry checking as well as a number of display characteristics.

How It Is Used

Our system is used by the analyst in the design stage of a program. The analyst and the end user can sit down together (or separately, if they desire) and design a form. The end user can be visually pleased with the final result. The analyst can be satisfied with the final specifications. The system prints copies of the form, copies of the specifications, stores all the information in a datafile, and generates the code necessary to interface the form to the applications programmer's code.

This means that application programmers do not have to worry about any of the input/output between their programs and the end-user. Programmers are guaranteed consistent and correct input. End users are assured of consistent responses to their input. In the event of an error, the system locks the keyboard and gives a message in plain English which explains what went wrong and how to fix it.

Gathering specifications and then coding a program to implement those specifications is a reasonably straightforward process. But it takes a long time to write, debug, and then modify that code.

By employing tools like CRTForm, the programmer/analyst is spared the problem of choosing, implementing, and testing hundreds of thousands of possible combinations of input. This is not to say that a good programmer could not perform such a task. However, it is a waste to spend valuable people's time doing what a machine can do.

Productivity Up 35%

In a production environment, we have found that a programmer's productivity (in terms of average total time to project completion) has increased over 35% by using the CRTForm system for program creation. The savings are even higher when program modifications are taken into account.

To modify a program using the system, the programmer need only call up the appropriate form and interactively make the necessary changes. The system will then generate new specification files, a new copy of the form, and do most of the work necessary to interface the newly corrected form to the applications programmer's finished code.

One of the major time-killers in a programming effort is customizing a program to take advantage of the features of a manufacturer's terminal, and then finding out that the client user base is switching to a different manufacturer. This problem has been eliminated with CRTForm.

Since all interaction with the terminal is done with interface calls to the Form System, the programmer remains blissfully unaware of any of the actual implementation details. Consequently, it is possible—and relatively simple—to write programs which take advantage of some of the features which make good terminals worthwhile.

The runtime module includes a table which contains all the information about which particular terminal is being used with the computer. This information can be changed by field service personnel or via telephone interface.

The system was designed to transfer some of the programming concepts developed on mainframes to the microcomputer industry. CRTForm was written in Pascal and runs on microcomputers under several different operating systems. Its code generation section allows its runtime modules to interface to Fortran, Basic, Cobol, and Ada, in addition to Pascal.

CRTFORM
A Programmer Productivity Tool

CRTFORM is a screen/form code generation system that allows you to create a friendly, error-free user interface to an application program.

Communicating with the user is easy using the CRTFORM system. Programmers report saving as much as 80% of their application development and modification time.

CRTFORM saves time by:

- Gathering application program specifications.
- Providing friendly and consistent runtime communication with the end user.
- Implementing CRT screen handling code.
- Assuring programmers that the information which they receive is correct.
- Allowing screen modifications and specification changes without requiring recompilation of application code.

CRTFORM comes with a complete reference manual and support services. The system consists of:

- A Forms Manager that maintains a random access file of forms.
- An Editor that creates and modifies the forms.
- A print utility that produces hard copy of forms and their specifications.
- Precompiled Run-time procedures that give the programmer power to control all screen interaction.
- A code generator that writes structured source code in Pascal, PL/I, FORTRAN, MBASIC, CBASIC, or COBOL.

CRTFORM interacts with the user on a field by field basis. When the user makes a mistake, CRTFORM tells him exactly what is wrong. Fields can have any of thousands of combinations of input specifications including:

- Field type—Character, Dollar, Number, Yes/no, System, or Date
- Range checking
- Justification—Left, Right
- Optional/mandatory entry and completion
- Special field edit features
- Automatic upper case conversion, blank padding, and field skips

A source code generator produces a code skeleton in the language of your application program to interface the precompiled CRTFORM runtime procedures to your program. The system will take control of the terminal and guide the user through the form a field at a time. In addition, other procedures are available which:

- Show and erase fields or sets of fields.
- Lock and unlock fields.
- Send error or warning messages to the user.
- Send default or dynamic values to fields.
- Change field ordering, and field progression.

CRTFORM will save you time and eliminate errors. Please call or write for ordering information on CRTFORM and our other information management packages.

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CRTFORM RUN-TIME PROCEDURES

Standard Readform Procedures–Every Standard procedure (except for USEFORM under certain circumstances) must appear in any applications program using the Forms system.

INITREAD	Initializes system variables.
GETFILE	Opens the disk file containing the forms to be used by the program.
USEFORM	Loads the form contents into memory.
READFIELD	Reads a field of the form and returns the input to the calling program.

Procedures Controlling Data Entry Sequencing–Depending on the data entered at run-time, the programmer may want to skip to a particular field, or force the user to re-enter data in the same field. These procedures allow the programmer to control the user's data entry sequence.

GOTO_FIELD	Positions the cursor to the specified input field for data entry.
RESET_FIELD	Returns the cursor to the field presently accessed, instead of advancing cursor to the next field.

User Communication Procedures–These procedures allow the programmer to send messages and warnings to the user at run-time without disrupting the screen form appearance.

SEND_MSG	Writes a character string at the bottom line of the terminal.
SEND_ERROR	Acts like SEND_MSG, but also locks the keyboard against entry, momentarily interrupting data flow and forcing the user to notice the message.
READCHAR	Reads a character directly from the keyboard.

SEND_FIELD Procedures–These procedures display information in fields. They may be used to send default values or dynamic run-time information to fields.

SEND_BOOLEAN	Sends a Yes or No value to a field.
SEND_DATE	Sends a date value to a specified date field.
SEND_STRING	Sends a message string to a field.

Advanced Programming Form Procedures–These procedures set up the special conditions under which a form may be put on the screen. These procedures may be used instead of USEFORM.

CLEARSCREEN	This procedure clears the screen. The programmer can use this routine to display special messages.
GETFORM	This procedure gets and loads a form from a file into memory but does not display the form on the screen.
SENDFORM	After GETFORM is called, this procedure can be used to display the entire form on the screen.

Advanced Programming Display Procedures–These procedures affect the screen display of a form by allowing the programmer to display or erase fields on the screen.

ERASE_FIELD	Allows the programmer to erase a field from screen.
SHOW_FIELD	Allows the programmer to display a field on the screen.

User Field Access Procedures–These procedures determine whether a user will be able to access a given field.

LOCK_FIELD	Allows a programmer to lock a field from user access.
UNLOCK_FIELD	Allows a programmer to unlock a field to user access.

Video Procedures–These procedures allow the programmer to control the video attribute display in the title or input portion of a field.

VIDEO_TITLE	Allows the programmer to display any combination of video attributes in the title portion of the indicated field.
VIDEO_INPUT	Allows the programmer to display any combination of video attributes in the input portion of the indicated input field.

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